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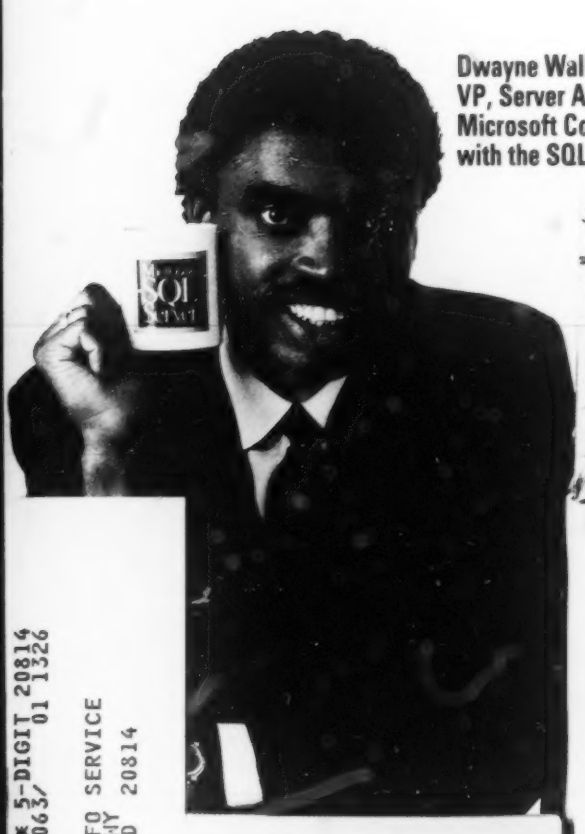
DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

JULY 1, 1991



Dwayne Walker, VP, Server Applications Group, Microsoft Corp., with the SQL Server

Microsoft's Client/Server Challenger

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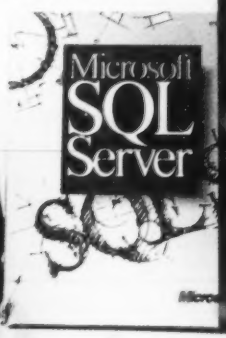

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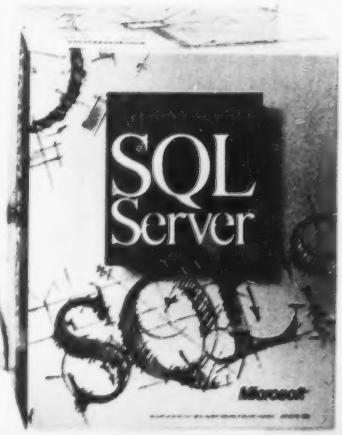

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EUROPEAN 25

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DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

VOLUME 37
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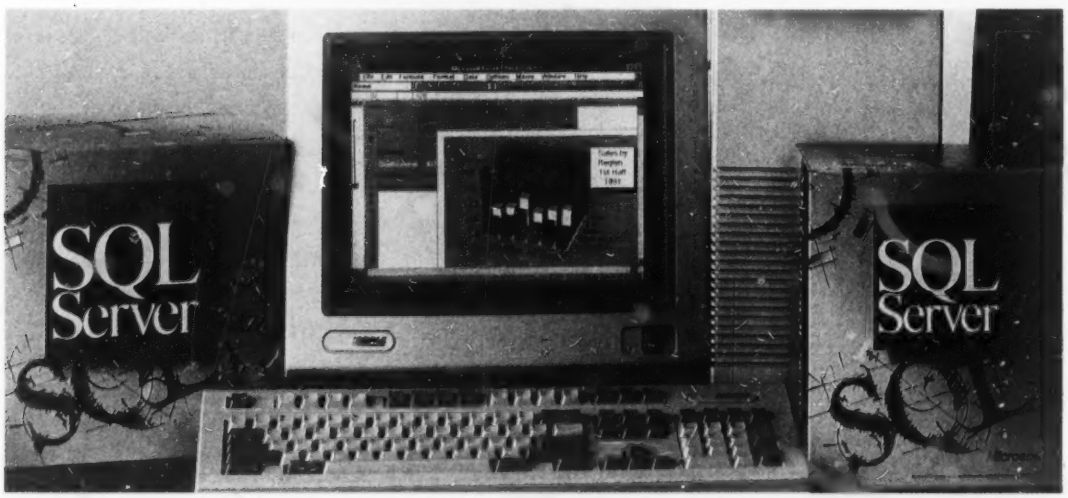

SQL Server is attracting attention for its technical strengths and the number of development tools available.

COVER STORY

PCs & WORKSTATIONS

Microsoft's Client/Server Challenger 28

BY JOHN McMULLEN SQL Server, Microsoft's tour de force in client/server technology, is turning heads by enforcing business logic in a new and productive way. But its OS/2 heritage and LAN Manager connections may hinder more than help.

Cover photography by Brian Drake

SPECIAL REPORT

CASE

AD/Cycle Goes Client/Server 34

BY ELIOT D. WEINMAN AND DAN KARA IBM is finally readying its AD/Cycle CASE tool architecture to live in a client/server world. New AD/Cycle partners Easel and Micro Focus may help them pull it off. But where's the repository?

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Windows Development Made BASIC 85

BY MIKE RICCIUTI
Programming for Windows is time consuming and tricky. Now Microsoft says it has made writing BASIC Windows applications as easy as using them.

Microsoft's Basker believes programmers should have GUIs too.

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PCs & WORKSTATIONS

X WINDOW SYSTEM

PCs Double As X Terminals 41

BY JOHN McMULLEN New software is appearing that gives PCs access to both DOS and X Window applications. Initial users seem satisfied, but performance constraints limit this option to occasional UNIX users.

NETWORKS

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Inventory Your LAN—Automatically! 47

BY SUSAN KERR New LAN utilities generate a database that not only tells you how many nodes you have but also tells you which CPU chips, network and video cards the nodes have and how much memory is available.

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Relief For Your Order Entry Headaches 51

BY EMILY KAY Looking to connect those old stand-alone order entry, shipping, invoicing and receivables applications? Integrated order entry systems can turn them into a single, automated order management system.

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PRINTERS

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BY NED SNELL Travel ingredients: good suit, business cards, laptop—and printer? You betcha. The list of lightweight, high-quality portables is growing.

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THE EUROPEAN 25

Ouch! Europe's Big Suppliers Feel The Pinch

BY ELAINE L. APPLETON

Executives from the largest European hardware companies called 1990 the worst year ever, as they struggled with competition from both the East and the West. But flexible, innovative software and service suppliers are thriving. **PAGE 60**

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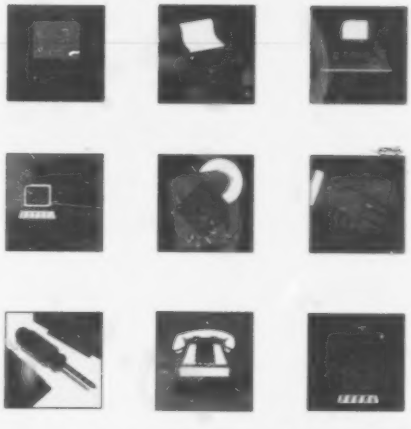

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Alcatel	70	Groupe Bull	68	Olivetti	68
Amstrad	78	GSI	81	Racal	74
British Telecom	74	Hoskyns	78	Reuters	82
Cap Gemini	70	ICL	69	SAP	82
CGI	82	Mannesmann	72	SD-Scicon	78
Comparex	74	Memorex Telex	70	Sema Group	77
Dowty	81	Nokia	72	Siemens-Nixdorf	68
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EUROPEAN 25

Ouch! Europe's Biggest Suppliers Feel The Pinch

Executives from the largest European hardware companies called 1990 the worst year ever, as they struggled with competition from both the East and the West. But flexible innovative software and service suppliers are thriving.

BY ELAINE L. APPLETON

In the classic musical Finian's Rainbow, a leprechaun named Og appears periodically wailing, "Gloom and doom, gloooooom and doooooom." The leprechaun has lost his pot of gold. And he won't stop wailing until he gets it back.

Og could have been the voice of the European media last year, which repeatedly lamented the bloodletting at Europe's computer makers. Europe's 25 largest information technology suppliers grew almost 10% from $38.0 billion in 1989 to $41.8 billion in 1990, an increase that, at first glance, looks healthy. However, observers sighing over the state of the industry have good reason to be depressed.

The weakness of the dollar (which fell an average 16.3% against the deutsche mark over the course of the year) artificially inflates the figures when they are translated from local currencies. That, in effect, overstates the extent of sales increases and disguises some actual revenue declines of the companies that made DATAMATION's first-ever list of the top 25 European-based IT suppliers. In addition, real revenue gains were often due to acquisitions, as buyers consolidated new subsidiaries' sales into their bottom lines.

Global recession and stepped-up competition from hungry American and Japanese manufacturers assaulted the bottom lines of European IT suppliers last year. Declining orders and faster product cycles that demanded ever-increasing research and development budgets combined to hit vendors where it counts: in the profit margin.

Where The Growth Is

The fastest growth in Europe lies in the software and services sectors.

EUR. RANK	COMPANY	SOFTWARE REVENUE 1990	1989	% CHANGE
1	15 Sema Group	533.4	378.6	40.87%
2	23 SAP	286.0	205.8	39.00%
3	11 Finsiel	525.2	391.5	34.16%
4	2 Olivetti	621.3	497.7	24.82%
5	3 Groupe Bull	635.0	512.9*	23.81%

EUR. RANK	COMPANY	SERVICES REVENUE 1990	1989	% CHANGE
1	21 GSI	285.2	210.6	35.44%
2	8 Cap Gemini	1465.9	1103.4	32.85%
3	9 Nokia	204.0	160.0	27.49%
4	11 Finsiel	336.0	271.0	23.98%

All revenue figures are in $ millions. * Restated figure.
Siemens-Nixdorf and ICL are not comparable to 1989, due to merger activities in 1990.

Hard Times In Hardware

Hardware vendors, especially, were hard hit. The top three suppliers on DATAMATION's Eurolist had an excruciatingly bad 1990, as did a number of other box manufacturers. Siemens-Nixdorf Informationssysteme AG (SNI), formed when Siemens AG acquired Nixdorf Computer AG in October 1990, is now the largest European computer maker, with $7.7 billion in revenues. But it hasn't yet made it into the black, and chief executive officer Hans-Dieter Weidig isn't making any promises about when it will. No. 2 Ing. C. Olivetti & Co. SpA capped four straight years of earnings declines with a profit plunge of more than 70% in 1990 to L60.4 billion ($50.8 million). And No. 3 Compagnie des Machines Bull shocked the industry when it lost Fr6.79 billion ($1.25 billion) last year.

Central to the losses suffered by the European 25 was the ailing economic climate throughout much of Europe, which depressed capital investments and, thus, orders for IT products. Sweden and the United Kingdom tottered on the brink of recessions, and growth of the other Scandinavian economies, along with those of France and Italy, also slowed.

Growth in real gross domestic product (GDP) crawled along at 0.5% in 1990 in the United Kingdom and 0.7% in Sweden and 1.4% in Finland, according to UBS Phillips & Drew Ltd., a London-based securities firm. IT investments followed, says Peter Rowell of Regent Associates Ltd., an acquisition broker in London. Real growth in IT was flat in Sweden and Finland, and grew only 6.3% in Britain. Contrast that with Germany, where "there was a tremendous surge in IT business," says Rowell. Germany saw real IT growth of 13%, he reports. But this year should get worse, according to UBS's regional economic forecasts, which don't predict a recovery in Europe until 1992. Even Germany's economy, bolstered by high demand for a variety of products from its eastern half, will slow down this year, predicts UBS.

Threats From The West

Along with regional recessions went the U.S. slowdown, which strengthened U.S. manufacturers' emphasis on selling to Europe. As usual in years past, IBM was the top supplier into Europe. But, last year, Big Blue garnered fully 40% of its revenue there ($26.8 billion), up from 35% in 1989. Similarly, all of Digital Equipment Corp.'s revenue growth came from sales outside the United States, and sales to Europe were up 11.7% to $5.5 billion.

The price discounting that goes with increased competition was tough on European vendors unused to lower profit margins. Comparex Informationssysteme GmbH and Memorex Telex NV, both of which compete directly with IBM, complained publicly that IBM was heavily discounting its products.

Furthermore, European companies couldn't keep up with technology innovation coming from U.S. IT firms, which have the advantage of economies of scale, says UBS Phillips & Drew electronics analyst Adam Quinton. "The Europeans [vendors] have been relatively backward in implementing new technologies. The innovations in PCs, for instance, are only coming from one part of the world, and it certainly isn't Europe."

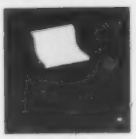
No European vendor of personal computers could hold its own against the likes of Compaq Computer Corp., Toshiba Corp. and the other Asian clone makers. Even the Houston mail-order house Dell Computer Corp. began to make headway with European customers, which until recently haven't been keen to purchase through the mail. Earnings at Britain's Amstrad PLC, once a top indigenous PC vendor, declined for the second successive year, descending more than £73 million in the last two years alone. Its 1990 earnings tumbled 33% to £34 million ($60.4 million).

In addition, says UBS's Quinton, European vendors "have been slow to adapt their structures to the new realities of open systems. For instance, Norsk Data and Nixdorf [now part of SNI] were stuck in proprietary architectures and were really left behind by events." Says Ninian Eadie, president of International Computers Ltd. (ICL) Europe: "Europe is moving to open systems very

The DATAMATION European 25

1989 EUROPEAN RANK	1990 WORLD RANK	COMPANY	1990 IS REVENUE	1989 IS REVENUE	% CHANGE	1990 TOTAL REVENUE	IS AS % OF TOTAL REVENUE	NET INCOME
1	--	8	Siemens Nixdorf*	7,735.1	N/A	N/A	7,735.1	100.00%	N/A
2	3	9	Olivetti	6,414.5	5,573.3	15.09%	7,593.7	84.47%	50.8
3	1	10	Groupe Bull	6,349.6	5,128.6	23.81%	6,349.6	100.00%	-1,246.8
4	4	17	NV Philips	3,283.9	2,814.8	16.66%	30,587.6	10.74%	N/A
5	--	20	ICL*	2,862.9	N/A	N/A	2,862.9	100.00%	N/A
6	7	30	Memorex Telex	1,951.2	2,056.6	-5.12%	1,951.2	100.00%	-68.9
7	8	31	Alcatel	1,890.0	1,800.3	4.98%	17,022.0	11.10%	872.0
8	10	37	Cap Gemini	1,684.9	1,103.4	52.70%	1,684.9	100.00%	112.9
9	9	45	Nokia	1,279.9	1,191.9	7.38%	5,788.6	22.11%	71.9
10	11	56	Mannesmann	893.2	819.1	9.04%	1,076.1	83.00%	N/A
11	14	58	Finsiel	861.2	662.5	30.00%	861.2	100.00%	18.7
12	13	63	British Telecom	776.8	692.5	12.18%	21,882.8	3.55%	N/A
13	15	67	Racal	693.0	573.9	20.75%	3,646.5	19.00%	205.7
14	16	70	Comparex	689.4	566.0	21.80%	689.4	100.00%	26.0
15	19	80	Sema Group	533.4	378.6	40.87%	666.8	79.99%	16.9
16	18	81	Sligos	530.7	400.7	32.44%	530.7	100.00%	N/A
17	12	82	Amstrad	518.7	717.0	-27.67%	943.2	54.99%	60.4
18	17	89	SD-Scicon	455.6	434.9	4.76%	455.6	100.00%	-17.2
19	--	102	Hoskyns	396.1	335.0	18.24%	396.1	100.00%	30.7
20	20	105	Norsk Data	383.5	358.1	7.10%	383.5	100.00%	N/A
21	23	107	GSI	375.3	277.1	35.44%	375.3	100.00%	N/A
22	--	110	Dowty	349.9	216.6	61.58%	1,298.4	26.95%	151.0
23	24	112	SAP	340.0	244.6	39.00%	340.0	100.00%	54.7
24	25	121	CGI	289.1	226.8	27.47%	289.1	100.00%	26.4
25	27	125	Reuters	264.7	213.6	23.90%	2,468.9	10.72%	N/A

Revenue figures are in $ millions.
* Siemens Nixdorf and ICL are not comparable to 1989, due to merger activities in 1990.



THE DATAMATION 100

EUROPEAN 25

much more rapidly than America. We don't think it's a minority sport."

Firms supporting fat staffs with the sizable income made on proprietary equipment felt the pinch of skimpier profit margins for items like PCs and UNIX-based systems that look more and more like commodities. In response, staff reductions were widespread. Olivetti has announced plans to lay off 7,000 workers. Scandinavian companies Nokia Data AB and Norsk Data AS together cut 1,100 jobs. Groupe Bull, which reduced its work force by 5,000 in 1990, will have dissolved 8,000 jobs by the end of this year. In total, seven of the top 25 announced plans to cut more than 20,000 IT jobs last year.

So were there any bright spots? There certainly were. As in the States, the victors in the European IT industry were those with solid offerings in software and in services, such as systems integration and facilities management. Companies that support open, networked computing showed particular strength. For instance, SAP AG, a German software company that makes distributed financial, accounting and manufacturing software for use by global customers, grew by 39% to $340 million, and its earnings rose a hefty 20.5% to $54.7 million. Revenues of its infant U.S. subsidiary, SAP America, skyrocketed 250%.

Eying the healthy software and services market, almost every company on DATAMATION's European 25 went roving the Continent and the United States in search of software acquisitions with which to enter the software market or solidify their positions there. Hardware makers, like U.K. modem leader Racal Electronics PLC, are transforming themselves into software and systems integration houses. They desperately need software expertise, which they're finding by mining the wealth at smaller firms. Of the boom in acquisitions, Claus Richter, managing director of Racal-Milgo GmbH, Racal's German subsidiary, says: "It is very, very difficult to find people with the right skills, particularly in Germany. You can retrain, acquire, go into alliances with software houses or take engineers from high school and train them."

The German Factor

Germany was a magnet for acquisition-hungry vendors: Cap Gemini Sogeti, CGI Informatique, Hoskyns Group PLC, ICL, La Générale de Service Informatique (GSI) Sema Group PLC and Sligos all bought software houses or eyed acquisitions in Deutschland. The draw is demand from eastern Germany and the Eastern Bloc. Says Regent's Rowell: "A lot of companies [in the West] were acquiring or partnering with companies in eastern Germany. The first thing they [businesses in eastern Germany] wanted to do was to put in IT systems."

The value of early positioning in Germany didn't escape notice in the States, although the price of European acquisitions for U.S. buyers was high due to the weak dollar. The biggest U.S. acquisition there was Mannesmann Kienzle GmbH's IT business, scooped up by Digital Equipment Corp., which plans a big expansion into the East.

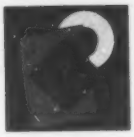
The companies moving into Germany in readiness for an IT explosion in eastern Europe are the early players.

The Top 25 Suppliers Into Europe

1990 RANK	1989 RANK	COMPANY	COUNTRY	1990 EUR. REV.	1989 EUR. REV.	% CHANGE FROM 1989	EUR % OF TOTAL IS	% CHANGE	% CHANGE (IN NATIVE CURRENCY) EUR. IS REV.	% CHANGE (IN NATIVE CURRENCY) TOTAL IS REV.
1	1	IBM	United States	26,836.0	21,281.8	26.10%	40.00%	5.00%		
2	--	Siemens Nixdorf*	Germany	6,961.0	N/A	N/A	90.00%**	N/A		
3	3	Digital	United States	5,490.4	4,915.9	11.68%	42.00%	4.00%		
4	4	Olivetti	Italy	5,324.1	4,514.4	17.94%	83.00%	2.00%	17.9%	15.1%
5	5	Groupe Bull	France	4,508.2	3,231.0	39.53%	71.00%	8.00%	39.5%	23.8%
6	6	Hewlett-Packard	United States	3,534.0	2,886.0	22.45%	38.00%	1.00%		
7	7	Unisys	United States	2,883.6	2,723.1	5.89%	31.00%	2.00%		
8	10	NV Philips	Netherlands	2,495.8	2,054.8	21.46%	76.00%	3.00%	21.5%	16.7%
9	--	ICL*	United Kingdom	2,290.3	N/A	N/A	80.00%	N/A		
10	11	NCR	United States	1,966.0	1,702.1	15.50%	35.00%	3.00%		
11	15	Compaq	United States	1,691.1	1,179.2	43.41%	47.00%	6.00%		
12	13	Apple	United States	1,607.2	1,235.6	30.07%	28.00%	5.00%		
13	17	Cap Gemini	France	1,465.9	893.8	64.01%	87.00%	6.00%	64.0%	52.7%
14	16	Canon	Japan	1,354.1	945.8	43.16%	29.00%	4.00%	43.2%	23.4%
15	12	Alcatel	France	1,341.9	1,476.2	-9.10%	71.00%	-11.00%	-9.1%	5.0%
16	14	Nokia	Finland	1,279.9	1,180.0	8.47%	100.00%	1.00%	8.5%	7.4%
17	18	Xerox	United States	960.0	892.8	9.77%	35.00%	3.00%		
18	23	Finsiel	Italy	861.2	636.0	35.41%	100.00%	4.00%	35.4%	30.0%
19	--	Sun	United States	828.9	515.6	60.75%	30.00%	5.00%		
20	22	Memorex Telex	Netherlands	813.7	664.0	22.55%	41.70%	8.70%	22.5%	-3.0%
21	21	Amdahl	United States	777.2	714.3	8.79%	36.00%	2.00%		
22	19	Wang	United States	756.2	836.1	-9.56%	32.00%	1.00%		
23	25	Commodore	United States	746.8	597.9	24.90%	75.00%	6.00%		
24	--	Comparex	Germany	654.9	566.0	15.71%	95.00%	-5.00%	15.7%	21.8%
25	--	Tandem	United States	618.1	536.6	15.20%	33.00%	1.00%		

Revenue figures are in $ millions.

* Siemens-Nixdorf and ICL are not comparable to 1989, due to merger activities in 1990. ** Percentage based on previous year's information.



THE DATAMATION 100
EUROPEAN 25

Many observers, and several U.S. IT companies, felt last year that the East wasn't yet ready to make IT investments. More basic needs such as food and shelter come first, as does the restructuring of the economy into a healthy capitalist society—a slow, difficult and painful task.

Other intra-European acquisitions, such as Siemens' absorption of Nixdorf, and Dowty Group PLC's purchase of Denmark's Dataco AS, occurred for a more fundamental reason. Large European vendors need critical mass. Greater economies of scale may provide European vendors with the larger R&D budgets they need to compete with American innovators. And these traditionally national champions now see the need to function globally. In particular, the coming unified Common Market presents opportunities for companies large enough to sell, service and distribute across Europe.

Threats From The East

The European vendors are scrambling to seize these opportunities before Asian competitors can muscle in. In fact, analysts, along with EC protectionists, suggest that the biggest threat to the continued existence of a European-owned IT industry may be coming from the Far East. NEC Corp. is negotiating to buy a stake in Groupe Bull. Fujitsu Ltd.'s purchase of ICL established a beachhead from which Fujitsu could make further European conquests. In May, ICL announced a plan to take over Finnish Nokia Data, rendering moot staunch assurances from managing director Vittorio Levi that Nokia would remain an independent, European-owned vendor. That's not likely to be the last such acquisition by Japanese IT buyers.

In the face of dire predictions that European-owned IT companies will become anomalies, savvy local executives are examining closely their mix of products and services. Through acquisition of new software products and by purchasing facilities management, consulting, systems- and network-integration expertise, they're attempting to ensure their viability in the new markets emerging in the 90s. And they're looking hard at Eastern Europe, because, from where the Europeans sit, the movement of information technology is clearly to the East. And that may be the only place European IT suppliers will find any pots of gold in 1991.

Foreign Exchange

Values of foreign currency (equivalent to one dollar) used in this year's DTM 100*.

European Currency Unit	ECU0.7877
Finland	Mk3.823
France	Fr5.446
Italy	L1190
Netherlands	G1.821
Norway	NKr6.258
United Kingdom	£0.563
Germany	DM1.616

*OECD average exchange rates

The DATAMATION European 25 By Technology

	COMPANY	1990 IS REVENUES	MAIN-FRAME	MID-RANGE	PCs	WORK-STATIONS	SOFT-WARE	PERI-PHERALS	DATA-COM	SERVICES	MAINTE-NANCE	OTHER
1	Siemens Nixdorf*	7,735.1	1,018.5	925.9	709.9	154.3	925.9	1,944.4	123.5	277.8	1,654.9	
2	Olivetti	6,414.5	121.8	526.6	1,791.7		621.3	1,113.8	221.4		1,106.6	911.4
3	Groupe Bull	6,349.6	825.4	317.5	1,142.9		635.0	1,333.4		317.5	1,333.4	444.5
4	NV Philips	3,283.9		335.0	576.6		104.3	1,164.2	510.7		472.3	120.8
5	ICL*	2,862.9	392.0	351.3	159.0	103.0	492.0	260.8	76.0	298.0	669.0	61.8
6	Memorex Telex	1,951.2			213.3			1,111.5			401.1	225.3
7	Alcatel	1,890.0			130.0		91.0	781.0	793.8		94.2	
8	Cap Gemini	1,684.9					33.7			1,465.9		33.7
9	Nokia	1,279.9		182.1	304.5	172.9	59.1	32.2	91.0	204.0	148.6	85.5
10	Mannesmann	893.2		312.6				446.6			134.0	
11	Finsiel	861.2					525.2			336.0		
12	British Telecom	776.8							372.9	403.9		
13	Racal	693.0							693.0			
14	Comparex	689.4	249.4					329.2			110.8	
15	Sema Group	533.4					533.4					0.0
16	Sligos	530.7			79.6		53.1			398.0	8.0	
17	Amstrad	518.7			499.1		8.9	10.7				94.1
18	SD-Scicon	455.6				44.4				317.1		
19	Hoskyns	396.1		30.2						365.9		
20	Norsk Data	383.5		212.0			31.2			140.3		
21	GSI	375.3					90.1			285.2		
22	Dowty	349.9							349.9			54.0
23	SAP	340.0					286.0					
24	CGI	289.1					98.3			190.8		
25	Reuters	264.7								264.7		

Revenue figures are in $ millions.
* Siemens Nixdorf and ICL are not comparable to 1989, due to merger activities in 1990.

SIEMENS-NIXDORF INFORMATIONSSYSTEME AG

OTTO-HAHN-RING 6
8000 MUNICH 83
GERMANY

RANK 1

IS REVENUE $7.74 B

The big question facing Siemens-Nixdorf Informationssysteme AG, formed October 1, 1990 by the merger of Nixdorf Computer AG and Siemens AG's Data and Information Systems Group, is when will it become profitable.

As the largest European-based computer company, SNI started life with DM12.5 billion ($7.7 billion) in revenue and had hoped to run in the black immediately. It didn't. An internal focus on integrating the two companies, marketplace pricing pressures and recessionary forces have caused SNI to announce that it may not reach the break-even point in 1991.

These same factors will directly affect what chief executive Hans-Dieter Weidig calls the key to SNI's success: customer confidence. "No customer is willing to give its nervous system to a partner that is doubtful to survive," he says. "You have to have confidence between customer and supplier."

That confidence has been strained by problems generated by the union: conflicts ranging from disputes over expense forms and costly procedural problems in processing sales orders to the challenges involved in integrating the two product lines. In the first six months after the merger, nearly DM500 billion ($31 billion) in sales went unbilled. Orders also slipped 5%, and recorded billings took a 17% nosedive compared with the performance of the two separate companies in same period of the previous year. All this took its toll: the company lost DM380 million ($235 million) in its first six months.

Nevertheless, there are some signs that SNI is starting to leverage its critical mass. The company reported improved sales and orders for the second quarter of FY1991, which ended March 31, when compared with the first quarter. And in March, SNI booked a record DM1.6 billion ($99 million) in orders.

Still, SNI will have to earn customers' confidence month by month, product by product, as it seeks to stabilize its operations. Judging from the views of one leading customer, Weidig himself is beginning to inspire that confidence. Says Rudiger Brand, chairman of the Europeanwide user group EDV-Anwenderkreis e.V. (EAK), which represents the former Nixdorf user base, "He's very good. He listens to customers." Nevertheless, because SNI's delay in reaching profitability "makes us a little nervous," says Brand, EAK is taking a wait and see attitude before pronouncing the merger a success.

What SNI's users are waiting to see is how successfully the company's product strategy unfolds. The firm is determined to be a universal supplier of information systems. Grounded in the idea of providing company-wide, fully networked computer systems, SNI's product portfolio includes a broad range of equipment and services. It offers AT-based PCs and the 386 SX Micro Channel Architecture PC and plans to add units based on the Extend Industry Standard Architecture (EISA) bus, as well. SNI provides Intel-based workstations and will offer others based on Mips Computer Systems Inc.'s chips. Its UNIX-based Targon and MX midrange systems will support both Intel and Mips microprocessors in a joint product family. SNI caps off its product line with its BS2000 proprietary mainframes.

"We have to be in the business with open systems and mainframes," says Weidig. "Data processing in the '90s will be proprietary mainframes and open systems."

—David R. Brousell

ING. C. OLIVETTI & CO. SPA

VIA G. JERVIS, 77
10015 IVREA, ITALY
(39-125)-525

RANK 2

IS REVENUE $6.41 B

In February, Vittorio Cassoni, managing director of Ing. C. Olivetti & Co. SpA, told the Italian journal *La Stampa* that "1990 was a terrible year, the most difficult since I've been working in the world of information technology. But we have persevered and guaranteed ourselves the opportunity to compete again in '91."

The numbers bear him out. Last year was the fourth in a row that Olivetti has suffered double-digit declines in net earnings, but it was the first year in which overall revenue remained essentially flat at L9.04 trillion ($7.6 billion). Earnings for 1990, at L60.4 billion ($50.8 million), were down more than 70% in terms of lira from 1989's L202.8 billion ($147.8 million).

Furthermore, says Bruno Lamborghini, vice president of corporate strategic analysis and planning, "We expect '91 will be even more difficult than '90, but we're ready also to start new business."

Olivetti may be ready to proceed, but it must wait and see if the recently reshuffled Italian government carries out promises made by the previous administration. In order to implement plans to cut 3,500 jobs in Italy, the company must wait for the government to pass a new early retirement law.

Luckily, not all of Olivetti's business prospects await decisions from Rome. Lamborghini is looking to the new Olivetti I line of 6.5-pound notebook and 12.1-pound laptop computers, developed and manufactured by the Triumph-Adler division in Germany, to capture 10% of Europe's portable market. Distributed by sales forces from both Olivetti and Digital Equipment Corp., these relatively lightweight units have been well received. Says Dataquest Europe director Philippe de Marcillac: "Olivetti is better placed than it has been in the last two years, with good products in the new laptop and notebook [markets]. The question is, can they deliver them on time and in quantity?"

If Olivetti's performance in laptops equals its experience in banking, which amounts to contracts worth almost L119 billion ($100 million), it should be satisfied. One banking customer, U.K.-based Leeds Permanent Building Society, is replacing all of its old Olivetti equipment with new models after having examined products from several vendors, including IBM. Says George Scarlett, head of the building society's computer services: "Olivetti offered a software platform that was tried and tested for retail banking, and from a price/performance perspective, they were very competitive."

—Marsha W. Johnston

COMPAGNIE DES MACHINES BULL

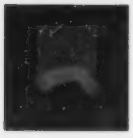
121 AVENUE DE MALAKOFF
75116 PARIS, FRANCE
(33-1)-45-02-90-90

RANK 3

IS REVENUE $6.35 B

Compagnie des Machines Bull has been struggling for some years. But last year was like no other. Groupe Bull's 1989 net loss of Fr267 million ($41.8 million) exploded to a staggering Fr6.79 billion ($1.25 billion) in 1990. It was, says chairman and chief executive officer Francis Lorentz, "like the ship had been struck broadside by a wave."

Several factors caused the brutal loss, says Jacques Lebhar, executive vice president for finance. First was the decline in sales volume and profit margins experienced by most hardware vendors. Bull incurred high costs in the process of transforming its U.S.-based Zenith Data Systems (ZDS) microcomputer operation from a government supplier into a commercial player. Integrating other acquisi-



tions cost Bull money, too, especially U.S. company Honeywell Federal Systems Inc. (HFSI), which Bull acquired for $93 million in October. And the company set aside Fr3.662 million ($665.1 million) to pay for future restructuring, considerably inflating what would otherwise have been a loss of Fr3.17 billion ($581.7 million).

The decline left Bull weakened, "but she did not capsize," says Lorentz. "And, once she has completed the present tack, she will set off again more quickly and powerfully than before."

That tack has two critical elements, the ambitious restructuring plan, called the Transformation Program, and Bull's new Distributed Computing Model (DCM).

PCs and workstations account for 24.7% of the European 25's revenue. Mainframe and midrange systems account for 13.6%.

Although somewhat late to the open systems market, DCM is critical for users of Bull's proprietary operating system, GCOS, in that DCM will provide some integration with UNIX and DOS-based systems.

As for the two-year restructuring program, Bull intends to cut 8,500 jobs by the end of 1991; it had already cut 5,000 people by early this year. Additionally, it closed seven of its 13 manufacturing plants, reorganized ZDS and formed several technological and geographical alliances in areas where it doesn't have critical mass. It merged operations in most Scandinavian countries with Nokia, Bull's Scandinavian distributor for more than 20 years. And it signed an agreement with Korea's Goldstar Co. Ltd. by which the Korean company will manufacture and market Bull's products throughout Asia.

Were Bull facing these tasks and financial recovery alone, its future would be more questionable, but the French government continues its capital support. It announced its intention to provide Bull with Fr4 billion over the next two years, although at press time it was uncertain whether the European Community would try to block the move.

—Marsha W. Johnston

NV Philips' Gl

Groenewoudseweg 1
5621 BH Eindhoven
The Netherlands
(31-40)-79-1111

RANK 4
IS REVENUE $3.28 B

Something incredible happened at NV Philips' Gl in 1990. In a year when the company lost G4.19 billion ($2.3 billion), cut its work force by 30,000 and changed top management, Philips actually increased its IS revenue.

Philips' IS business came to G5.98 billion ($3.28 billion) last year, which meant only a modest 0.2% increase from 1989's levels in Philips' native currency. But measured in the dollar, which weakened against the guilder during 1990, Philips' IS business expanded 16.7% last year. Philips' overall revenues of G55.69 billion ($30.59 billion) marked a 2.5% decline in guilders in 1990, but a 13% increase in terms of the dollar.

Apart from a favorable currency swing, the source of Philips' IS growth lies in personal computers and peripherals. PC sales grew a robust 30% to G1.05 billion ($577 million), while peripheral sales were up 23% to G2.11 billion ($1.16 billion).

Philips' strategy for its PCs and other systems is a willingness to combine the company's technology with what other information technology suppliers have to offer. Philips used Microsoft Corp.'s Windows 3.0 graphical user interface as the basis for a desktop document organizer it introduced in 1990.

Another partner in Philips' systems strategy is Sun Microsystems Inc. Using Sun's SPARCstations, Philips' is launching an advanced system for automatic handling of tax returns and insurance policy claims. Aimed at reducing paperwork, the system employs Philips' new case-handling software and its optical document-imaging hardware.

Imaging is clearly one market segment in which Philips sees opportunities. Last year, the company continued to expand its Megadoc family of optical systems.

UNIX-based systems also are high on Philips's agenda—and with good reason. The company's midrange business declined from 5% in 1990, as users turned away from many of the proprietary systems Philips had traditionally marketed. Philips's plan is to strengthen its UNIX base, broadening the number of commercial applications for this standard operating system in key user sectors such as finance and government.

As the company expanded its IS service and software activities around standard platforms throughout 1990, it actually cut back on its IS work force. The number of Philips's IS workers dropped 15% to 14,970 in 1990.

The cost-cutting initiated by the company's new president, Jan D. Timmer, began to pay off early in 1991, when Philips announced modest first-quarter profits of G135 million ($70 million).

—Peggy Salz Trautman

International Computers Ltd. Plc

1 High Street
Putney, London SW15 1SW, U.K.
(44-81)-788-7272

RANK 5
IS REVENUE $2.86 B

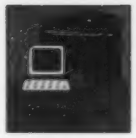
It is hard to imagine how 1990 could have been a more momentous year for International Computers Ltd. PLC.

Its ownership changed from European to Japanese hands in November, when STC PLC sold 80% of the firm to Fujitsu Ltd. Protectionist sentiments flared with the Japanese company's arrival. In March, the board of the Joint European Silicon Submicron Initiative (JESSI) rejected ICL's petition to up its JESSI participation from two projects to five.

Despite a deep recession in the United Kingdom, ICL enjoyed great success with two major new product lines, the DRS 6000 UNIX midrange systems and the series 39 SX mainframes. The company sold 1,000 of the DRS 6000 systems, said to be the first system powered by Sun Microsystems Inc.'s Scalable Processor Architecture (SPARC) reduced instruction set computing (RISC) microprocessor that runs UNIX System V release 4. The UNIX midrange systems garnered significant original equipment manufacturer (OEM) business for ICL, as well. Sun contracted to market the systems in the United States; Acer Inc. will sell them in Taiwan; and Fujitsu will market them in Asia, Australia, North America and Spain. ICL extended the line with an Intel 80486-based deskside version in November.

The new series 39 SX mainframes, including two more models introduced in January of 1991, have been hailed as superb uniprocessors. Although they run ICL's proprietary VME operating system, the company is committed to making them compliant with X/Open Co. Ltd.'s XPG/3 portability guidelines by later this year.

In the past, says David Stewart, chairman of the International Computers Computer Users Association, ICL's customers had to keep the pressure on for new products and product enhancements. "But, with the timeli-



ness and quality of their products in the last three or four years, the need for the user group to put pressure on them to improve products has evaporated," he says.

ICL is aggressively developing its systems integration business, buying companies that enhance its available pool of skills. In October, for instance, it spent £10 million ($17.8 million) for Databolin Information Systems AB, a Swedish supplier of UNIX-based process-manufacturing software.

Despite all of its product and service innovations in 1990, the difficult economic climate worldwide and the U.K. recession kept revenues essentially flat at £1.61 billion ($2.86 billion).—*Marsha W. Johnston*

Memorex Telex NV

HOOGOORDDREEF 9
1101 BA
AMSTERDAM ZO, THE NETHERLANDS
(31-20)-974-331

RANK **6**

IS REVENUE **$1.95 B**

"The computer industry is in a turmoil. There are two safe positions in the market today: IBM, and niches under the IBM environment." Giorgio Ronchi, the elegant, affable chief executive officer of Memorex Telex NV, made this statement in October 1990. In early 1991, the industry proved him wrong on both counts.

IBM plug-compatible manufacturer (PCM) Memorex Telex NV, better known for reselling than for manufacturing PCM equipment, gets high marks from industry observers for the quality of its sizable international service and support network. But, despite its strengths, orders for its products—terminals, disk drives, tape libraries and the like—slowed in 1990, a weakness the company blames on the Gulf War and the global recession. Memorex Telex lost $68.9 million last year, some 27.1% more than the $54.2 million loss generated in 1989. Overall, 1990 revenue, which the company reports in dollars, came in at $1.95 billion in 1990, down a slight 3% from 1989.

These back-to-back losses are interfering with the peripherals company's ability to service its outstanding debt of $200 million. At press time, the company said it might default on a pending loan payment of some $70 million. When he announced the possible default, Ronchi said the company was evaluating various refinancing and restructuring alternatives. A clue to what he may have in mind is AT&T's 1990 acquisition of just over 6% of the company. Ronchi would like to lure other investors into purchasing similar 5 to 10% equity stakes to help the privately held firm over the hump.

Memorex Telex's biggest weakness last year was it U.S. operation, Memorex Telex Corp., where sales were flat. Previously strong sales of 3270 terminals were eroded by competition from PCs and workstations. Last fall, Ronchi brought in David Faulkner as the new president of U.S. operations to improve North American profits.

Despite the gloomy picture, consultant Bob Djurdjevic of Phoenix-based Annex Research asserts that the company is sound. One piece of evidence: on February 2, 1990, Memorex Telex Japan floated a wildly successful initial public stock offering. Stock prices zoomed from 1,700 to 4,000 yen ($11.74 to ~$27.62) in one day, says Djurdjevic. Asian business contributed 12.4% to revenues last year.—*Elaine L. Appleton*

Alcatel NV

33 RUE EMERIAU
75015 PARIS, FRANCE
(33-1)-40-58-58-58

RANK **7**

IS REVENUE **$1.89 B**

Although Alcatel NV ended 1990 in a strong financial position, its growth is slowing. The company, which is nominally headquartered in the Netherlands and uses the European Currency Unit for accounting purposes, reported total revenues of ECU13.4 billion ($17 billion) last year. This 5% increase from 1989 contrasts with the 15% growth the company achieved in 1989. Profits rose 23.7% to ECU591.6 million ($751 million), somewhat shy of the 43% jump the year before. However, the increase was still good news, with 1990 earnings bringing the company's profitability to 5% of total sales, a level that chairman and chief executive officer Pierre Suard did not expect to achieve before 1992.

Alcatel is divided into four main operating divisions. In 1990, its new Network Systems organization, which combines switching and line transmission into a single product group, was put into place. This division generated 37% of the firm's total revenues last year. The Radiocommunications, Space and Defense (RSD) division accounted for 9% of total sales; Business Systems contributed 17%; and Cables came in with 28%. The remaining 9% was generated from other activities such as sales of professional electronics and network engineering. DATAMATION estimates Alcatel's IS revenue at ECU1.49 billion ($1.89 billion), or 11.1% of the company's total income.

Alcatel depended on profits generated by its Cables and Network Systems divisions to compensate for the less than glowing financial performance of its other two divisions. The RSD branch had an operating loss of ECU27.6 million ($35 million) in 1990. The company attributes this showing to RSD's enormous investments in digital cellular networks, especially in systems based on the pan-European Groupe Speciale Mobile standard, which ate up ECU100 million ($127 million), or 22% of the division's 1990 revenues. Similarly, the Business Systems division, feeling pressure from increasing international competition in the European terminal market and having trouble selling Minitels outside France, saw its 1990 operating profits plummet by 63%.

Alcatel's most significant 1990 acquisition was Fiat SpA's Telettra SpA, Italy's leading supplier of telecommunication equipment. Telettra is merging with Alcatel's own Italian subsidiary to form a new company. Under the terms of the the merger, approved in April of 1991 by the European Community, Alcatel will own 75% of that concern, and Fiat will hold the other 25%.—*Jean Magan*

Cap Gemini Sogeti

11 RUE DE TILSITT
75017 PARIS, FRANCE
(33-1)-47-54-50-00

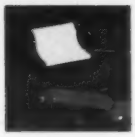
RANK **8**

IS REVENUE **$1.68 B**

In 1990, the leading European-owned software and services company brought its list of acquisitions over the past six years to 20.

In July, Cap Gemini killed two strategic birds with one stone when it acquired 69.5% of London-based Hoskyns Group PLC, a company that had been the target of other computer vendors, including Fujitsu Ltd. "We had been looking forever to do something significant in the U.K., and Hoskyns still is number one in the local U.K. [computer services] market," says Michel Berty, Cap Gemini's secretary general. "Also interesting was their ability to do facilities management projects. Years ago, we had announced that we would consider getting into FM as a strategic area, but really hadn't done much since." The company's FM activities had been limited to the small French company, CAP Sesa Exportation, which provided customers with information services personnel but did not act as a systems integrator or provide equipment.

In Germany, Cap Gemini doubled its size with the purchase of Scientific Control Systems GmbH (SCS), the German subsidiary of British software services company SD-Scicon PLC. The acquisition, says Berty,



provided Cap Gemini with the systems integration capability it had been looking for.

Cap Gemini also moved into management consulting last year. Parent company Sogeti SA formed the Sogeti Consulting Group by acquiring the research firms Gamma International of Paris and United Research of Morristown, N.J. Early this year, it added another firm, the Mac Group of Cambridge, Mass.

The move into management consulting is designed to give Cap Gemini's software and services operations a competitive edge.

Up to this point, however, Cap Gemini hasn't been handicapped by its previous lack of management consulting. For 1990, it reported a healthy 30% increase in revenue to Fr9.17 billion ($1.68 billion). Net earnings were up 17% to Fr615 million ($112.9 million). Berty attributes Cap Gemini's growth to customers' increasing need for services and expertise, as information technology projects become more complex.

—Marsha W. Johnston

NOKIA DATA AB

P.O. BOX 780 L0-101
HELSINKI, FINLAND
(358-0)-5671

RANK 9
IS REVENUE $1.28 B

Nokia Data AB, the information technology division of Finnish conglomerate Nokia, took a roller coaster ride last year. The company lost money in Scandinavia, traditionally a profitable market. But in usually troublesome Western Europe, Nokia Data's vertical application solutions for PCs and minicomputers helped the company show a small profit. However, that uptick didn't offset troubles at home: total sales were down 4% to Mk4.9 billion ($1.28 billion).

Nokia Data is highly dependent on Scandinavia. The Finnish market accounts for 40% of the company's sales, and the rest of Scandinavia accounts for another 30%. The remaining 30% comes from Central Europe. In Finland and the other Scandinavian nations, Nokia Data is strong as both a manufacturer and supplier of hardware and software and as an agent for companies such as Compagnie des Machines Bull, Hitachi Ltd., Sun Microsystems Inc. and Tandem Computers Inc.

However, the future does not look especially bright. Competition from European, Japanese and U.S. vendors toughened last year. Following the trend of most PC and mini makers, Nokia Data's margins declined. The company also suffered internal problems. It is still laboring to blend the cultures of the two companies that formed Nokia Data in 1988: the data division of LM Ericsson Telephone Co. and Nokia's own IT operations. Delayed deliveries and products that did not live up to promises hurt the company's reputation. Moreover, Nokia Data reduced its work force by 700 people through retirements and layoffs, which also cut into the company's ability to maintain high-quality service. Nokia Data plans to lay off another 500 workers by the middle of this year.

On top of all this, the Finnish economy has weakened sharply. The banking and financial sectors, which Nokia Data considers its most lucrative vertical markets, have been especially hard hit. Total sales in Finland dropped about 15% last year; in Sweden, sales were down almost 10%.

Following years of speculation that Nokia would be acquired by some other European company or a Japanese firm, ICL of Britain announced at presstime a plan to take over Nokia in a deal worth £230 million ($408.5 million). ICL, which is 80% owned by Japan's Fujitsu Ltd., said it will merge the two companies' IT operations to create a business with total sales of £2.3 billion ($4.9 billion) and employing 24,000.

—Johan Hallsenius

MANNESMANN KIENZLE GMBH

POSTFACH 16 40 7730 AS-VILLIGEN
GERMANY
(49-7721)-671

RANK 10
IS REVENUE $893.2 M

This is the last year that Mannesmann Kienzle GmbH will appear in the DATAMATION 100 ranking. As of January 1, 1991, the company's information systems businesses were absorbed into a joint venture with U.S. systems giant Digital Equipment Corp. Digital holds 65% ($230 million) of the new venture, called Digital Kienzle Computersysteme GmbH & Co. KG; Mannesmann holds the remaining 35%. Revenues will be consolidated into Digital's sales.

The deal helps to satisfy Digital's increasing need for a strong presence in Europe, particularly in the competitive German marketplace. Mannesmann's computer systems businesses were restructured in 1989, but the German vendor was unable to crack international markets to any significant extent. In addition, the company, which claims an installed base of 25,000 MTOS-based 9000 systems, has been moving away from the proprietary line toward its UNIX-based business systems. This 2000 series was introduced in 1989. Few minicomputer vendors have managed this transition without pain, but Digital Kienzle officials state that demand for the 2000 is growing fast.

The Mannesmann side of the house brings the new 28000 family of UNIX-based workstations to Digital Kienzle. These systems, introduced last year, are based on Mips Computer Systems Inc.'s R2000 and R3000 reduced instruction set computing (RISC) microprocessors. Digital offers workstations based on these chips, as well. Mannesmann Kienzle also introduced new Omega office automation software for customers in the financial and manufacturing arenas.

Digital Kienzle's major goal is to establish an international presence and make inroads into Eastern Germany and throughout Eastern Europe. It also hopes to better target customers in four key areas: finance, administration, retail and manufacturing. Officials from the joint venture have stressed that the company will continue to service its existing customer base.—*Peggy Salz Trautman*

FINSIEL SPA

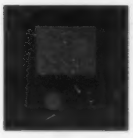
VIA ISONZO, 21/B
00198 ROME, ITALY
(39-6)-84311

RANK 11
IS REVENUE $861.2 M

No doubt the biggest event of the year for Italy's largest software and services company was the May arrival of new management at Finsiel SpA (Finanziaria per i Sistemi Informativi Elettronici). New administrator Pier Paolo Davoli and president Carlo Tedeschini Lalli have made it clear that they intend to eliminate the perception that Finsiel, which is partially owned by the Italian government, is a lightweight in the private sector.

Davoli, an IBM veteran and former information systems manager with Alitalia-Linee Aeree Italiane SpA wants to expand the company's 11.4% share of the Italian software market. He particularly wants to increase Finsiel's sales to private customers, especially those in banking and finance. To that end, the few months of his tenure have seen the establishment of Binsiel, a consortium with Credito Italiano and Banco di Roma intended to develop advanced banking products and services. It has also seen the acquisition of 60% of Eurosystem, an Italian software house, from the San Paolo of Torino banking group; and the acquisition of Data Management, a software company held by Credito Italiano.

Finsiel's 1990 revenue increased almost 14% to L1.025 trillion ($861.2 million), while



net earnings increased 29%, from 1989's L17.3 billion ($12.6 million) to L22.3 billion ($18.7 million).

In 1990, Finsiel chose to sell through distributors abroad, closing its direct sales office in San Diego. The company, which has almost no business overseas, says it is revising its international strategy. However, officials say Finsiel won't attempt to expand overseas again without a local partner.—*Marsha W. Johnston*

British Telecommunications Plc

BT Center
81 Newgate Street
London EC1 A7AJ, U.K.
(44-71)-356-5000

RANK 12
IS REVENUE $776.8 M

After a year of massive restructuring, British Telecommunication PLC decided on April 1, 1991 to streamline its name, to BT PLC. The new moniker, which does not change the company's legal name, nevertheless underscores the former U.K. telephone monopoly's stated ambition to remake itself into the world's most successful value-added voice and data services company.

Much of BT's efforts during 1990 focused on that restructuring effort, called Project Sovereign. The streamlining effort slimmed down this traditionally over-staffed company by 10,000 people through a combination of voluntary severance and early retirement programs.

The reorganization coincided with a further round of deregulation in the United Kingdom's telecommunications market. Despite fears that it would lose heavily from the November 1990 government proposals to allow more national, regional and local carriers, BT emerged relatively unscathed, except for a moderate cap on the pricing for international calls.

BT is intent on becoming solely a service company, and it has begun unloading its manufacturing concerns. Most notably, it decided to sell back its 51% stake in Canadian telephone switch maker Mitel Corp. BT has already sold off most of its telephone-manufacturing facilities.

The company also announced its long-awaited Global Network Services offering. That service brings together existing value-added voice and data services from its U.K. subsidiary, Dialcom Inc., with the San Jose-based BT Tymnet Inc., the subsidiary it acquired from McDonnell Douglas Corp. late in 1989.

In its most eventful year since it was privatized in 1984, and despite a debilitating economic recession, BT still managed to grow. Revenue increased by 11.9% to $23.5 billion, and earnings jumped 15% to $6.1 billion.

—*Jon Kaye*

Racal Electronics Plc

Western Road
Bracknell, Berkshire
RG12 1RG, U.K.
(44-344)-481-222

RANK 13
IS REVENUE $693.0 M

The breathtaking growth in the mobile telephone business has meant extraordinarily high market valuation for Racal Electronics PLC's subsidiary Racal Telecom PLC. This growth led to a proposal by Racal's directors that Racal Telecom and Racal-Chubb Security Group, a maker of security systems, be spun off from Racal Electronics to maximize their share values. A decision about the proposal will be reached this month.

Racal Telecom and Racal-Chubb, with combined 1990 revenues of just over £1 billion ($1.78 billion), accounted for about half of Racal Electronics's total revenue of £2.05 billion ($3.65 billion). The mobile phone concern in particular has developed an almost autonomous identity, says Mike Styles, electronics analyst with London-based Smith New Court Securities. At press time, for instance, Racal Telecom's share price was £3.80, making Racal Electronics's 80% stake worth more than £3 billion ($5.33 billion)—more than the market capitalization of Racal Electronics as a whole.

Since this situation, which existed in varying degrees for most of 1990, creates a negative market value for the remaining Racal businesses, the directors decided the breakup would be the best way to establish fair market value for all of the businesses.

In the United States, Racal-Milgo purchased Network Communications Group from Digital Communications Associates Inc. for $28 million and entered a joint marketing agreement with MCI Communications Corp. to offer a network solutions package. Racal Data Communications also got a new president, James K. Norman, who committed the firm to providing network solutions rather than just equipment.

Overall, Racal Electronics's IS revenues, which the company reports in dollars, climbed by 20.8% to $693 million. Total operating income increased 30% to 265.1 million ($470.9 million). But net corporate earnings dropped by more than 70%, from £399 million ($652.6 million) to £115.8 million ($205.7 million). The earnings plunge is deceptive: 1989's figures were inflated by a £290.3 million profit made from the sale of 20% of Racal Telecom stock. Factoring that out, the company actually achieved a 6.5% increase in net earnings.

—*Marsha W. Johnston*

Comparex Informationssysteme GmbH

Gottlieb-Daimler-Strasse 10
6800 Mannheim 1, Germany
(49-621)-40090

RANK 14
IS REVENUE $689.4 M

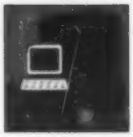
"Taking advantage of high demand in Western Europe and emerging new markets in the East" is how Comparex Informationssysteme GmbH's chief executive officer Rolf Brillinger accounts for his company's strong showing in a year when other mainframe computer suppliers experienced dwindling profits and weak sales.

Comparex's earnings climbed to DM42 million ($26 million) last year, with sales increasing to DM1.11 billion ($689 million). In terms of the deutsche mark, net earnings rose 17% and revenue increased 4.4% over 1989. However, measuring with the dollar, which weakened against most European currencies in 1990, the company's profits jumped 53%, and revenues rose 22% last year.

In 1990, Germany accounted for 51% of Comparex's revenue. That percentage could increase even more this year, now that the company has established a full sales and services network in the country's eastern territories. The rest of Europe generated 44% of Comparex's sales. The company does only 5% of its business in Asia, and conducts no business in North America.

Comparex's product mix is somewhat more diverse than its geographic complexion. Peripherals contributed 48% of the company's sales. Disk drives and tape cartridge drives were in extraordinarily high demand, Brillinger says, which led to temporary delivery problems and bottlenecks. Comparex's 6388 automatic cartridge library system emerged as the second most popular library system in Europe, after Storage Technology Corp.'s 4400 system. By the end of the year, Comparex had installed 100 of its library systems.

Mainframes accounted for 36% of corporate revenues. Comparex enlarged its mainframe offering in 1990 with the 8/8XX, which already is shipping, and with the



9/9XX, which is scheduled to ship this year. Maintenance and other support services yielded the remaining 16% of the company's revenue.—*Peggy Salz Trautman*

SEMA GROUP PLC

22 LONG ACRE
LONDON WC2E 9LY, U.K.
(44-71)-379-4711

RANK 15
IS REVENUE $533.4 M

Looking back over Sema Group PLC's business in 1990 and early 1991, chief executive officer Pierre Bonelli delights in giving his favorite example of what he calls the European synergy in this software and services organization. Sema Group SAE, the company's Spanish subsidiary, won a contract to develop software for the 1992 Summer Olympic Games in Barcelona. The contract included programs to manage everything from broadcast scheduling to training to sports equipment control. "Then," Bonelli says, "the British Sema team won the facilities management contract for the Games and will thus operate the systems created by the Spanish Sema Group."

Overall, 1990 revenues grew 28%, reaching £375 million ($666.8 million). But earnings declined by almost 10% to £9.5 million ($16.9 million).

The company, which garners 98% of its revenue in Europe, did best in Germany. Revenue there grew 6%, due to Sema's acquisition early in the year of 50.13% of industrial software maker ADV/Orga F.A. Meyer AG of Wilhelmshaven. Sema spent much of the year trying to regain public confidence in ADV/Orga, which had lost DM14.2 million ($42.5 million) in the fiscal year that ended June 30, 1989. ADV/Orga generated £20 million ($35.5 million) for Sema in 1990, surpassing Sema's predictions by a few million dollars.

Sema just about doubled its 1990 research and development budget to £21.6 million ($38.4 million). Much of that money went to upgrade I-Line, ADV's manufacturing package.

—*Marsha W. Johnston*

SLIGOS

3 PLACE DE LA PYRAMIDE
CEDEX 49
92067 PARIS LA DEFENSE, FRANCE
(33)-1-49-00-90-00

RANK 16
IS REVENUE $530.7 M

Software and services company Sligos saw another successful year in 1990. Its IS revenue reached Fr2.89 billion ($531 million), up 15% from those of 1989. Net earnings increased 19.6% to Fr160.2 million ($29.4 million) 1990.

A public company since 1986, Sligos is a subsidiary of French bank Crédit Lyonnais and remains strong in banking and related services. Financial services still account for 40% of the company's total revenue, but their contribution to total revenue declined slightly over the past year. Sligos owes its 1990 results to its fast-growing systems-engineering business, which now accounts for 29% of the company's total revenue compared with 22% in 1989. The remainder of Sligos's revenue comes from value-added ser-

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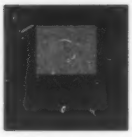


vices and microcomputer sales.

Forecasting revenue of Fr3.5 billion for 1991, Sligos intends to pursue new growth throughout Europe. In addition to acquiring a 60% stake in network specialist Derieux last year, Sligos acquired two French services companies. Sertech specializes in financial services and Maintech is a software reengineering firm. Sligos also took over the Italian industrial systems company Mesarteam and the Spanish financial services company Procesa. These last two acquisitions, along with several contracts signed in Eastern Europe, brought Sligos's revenue outside of France to 11% of total revenue, up from a mere 5% two years ago.—*Jean Magari*

AMSTRAD PLC

BRENTWOOD HOUSE
169 KING'S ROAD
BRENTWOOD, ESSEX CM14 4EF, U.K.
(44-277)-228-888

RANK 17
IS REVENUE $518.7 M

A new generation of desktop PCs and a foray into the lucrative color laptop market did nothing to stop Amstrad PLC's declining fortunes in the personal computer market.

On its home turf, the company suffered at the hands of Compaq Computer Corp., which is near to overtaking IBM as the number one PC supplier there. And Dell Computer Corp. has blasted away theories that the British would not take to the PC mail-order concept.

Total corporate revenues dropped 16% to £531 million ($943.2 million). The company also announced a second successive decrease in net earnings, from £51 million ($83.4 million) in 1989 to £34 million ($60.4 million).

Amstrad's experience overseas was no more encouraging. In the States, Sears, Roebuck and Co. announced the end of a five-year, nationwide distribution arrangement with Amstrad. In addition, Amstrad scrapped plans to sell through major dealers such as Businessland Inc. and ComputerLand Corp., in favor of increased catalog sales.

Still grappling with its roots as a maker of inexpensive hi-fi systems and home computers, Amstrad made little headway into the business market with its 80X86-based PC1640 and subsequent PC2000 series. Hoping new products would give the company better entrée into the business market, Amstrad unveiled its PC3000 series, based on Intel's 80286, 80386 and 80386SX microprocessors.

Early in 1990, the company launched the ALT laptop line, which includes a color model. The 80X86 line succeeded the aesthetically displeasing 8086-based PPC laptops.

Amstrad is adamant it will maintain its lifelong strategy of selling inexpensive PCs, but the twin pressures of the belt-tightening economy and increased competition, especially in Europe, will be major factors governing performance in 1991.—*Jon Kaye*

SD-SCICON U.K. LTD.

CENTRUM HOUSE
101-103 FLEET ROAD
FLEET, HAMPSHIRE GU13 8NZ, U.K.
(44-252)-622-161

RANK 18
IS REVENUE $455.6 M

Trouble at home and success abroad was the order of the day for systems integration house, SD-Scicon PLC.

The recession in the United Kingdom and a change in British government procurement policy led to heavy losses in the company's U.K. business last year. Instead of time-and-materials, charge-as-you-go contracts, a change in policy means that government contracts now must be fixed price. But the company wasn't experienced at up-front estimates of fixed price contracts, admits chief executive Philip Swinstead. And inaccurate estimates injured the bottom line. But due to revenue from long-term contracts, it wasn't until last year that the change significantly affected profits.

Company founder Swinstead, unhappy with the U.K. losses, returned as chief executive from his nonactive role as chairman late last year. One of his actions was to bring in new talent to manage the systems integration business. "The people who run [systems integration] are from the electronics-contracting business, not the software business," he says. "So now we know how to negotiate fixed price contracts....Customers always want changes which can eat into profits and put you into a loss quite quickly."

Software and services account for 23.3% of the European 25's revenue. Peripherals account for 20.3%.

In 1990, SD-Scicon could not avoid a loss of 10% on revenue of £256.5 million ($455.6 million) even by selling two subsidiaries. It ended the year with a loss of net earnings of £9.7 million ($17.2 million). Unprofitable German subsidiary Scientific Control Systems GmbH went to Cap Gemini Sogeti, and Warrington Financial Services, a U.S.-based, on-line bond-trading consulting firm, went to Sungard Data Systems Inc., a U.S. disaster recovery firm.

Of four U.K. business groups—facilities management, application products, systems integration and a consulting firm, the consultancy was the only bright spot in the company's otherwise dismal British scene. It achieved a record £19 million ($31 million) in revenue, a 20% increase over 1989's figures.—*Marsha W. Johnston*

HOSKYNS GROUP PLC

HOSKYNS HOUSE
130 SHAFTESBURY AVENUE
LONDON W1V 7DN, U.K.
(44)-71-434-2171

RANK 19
IS REVENUE $396.1 M

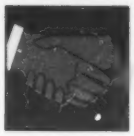
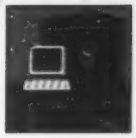
After 13 successive years of growth, topped by a strong 18% increase in revenue in 1990, U.K. services group Hoskyns Group PLC has entered 1991 fearing that its luck may be running out. Worries about the lackluster U.K. economy are compounded by the fact that two major facilities management contracts brought in £20 million ($36 million) less than the company had expected.

"It is difficult to envisage significant revenue growth this year," admits executive chairman Geoff Unwin.

Nineteen-ninety saw massive changes at Hoskyns. In July, French services giant Cap Gemini Sogeti bought a 69.5% controlling interest in the company from Plessey Co. Ltd. The move was Cap Gemini's attempt to acquire a strong foothold in the U.K. services market and to beef up its facilities management expertise.

Hoskyns, meanwhile, was on a buying spree of its own. After acquiring U.K. open systems services firm The Instruction Set in 1989, Hoskyns spent 1990 picking up Germany's TechnoData GmbH, which specializes in construction industry software, and U.K. geographic IS company Conder Technology, a division of construction group Conder PLC.

Most of Hoskyns's business served customers using IBM and Digital Equipment Corp. systems. Only £8 million ($14.2 million) came from contracts based on open

systems. Hoskyns is now pushing its open systems approach hard, hoping to hike that revenue in the years ahead. It should have a [illegible] up, as its subsidiary, The Instruction Set, is widely recognized for its open systems expertise. Observers point to this as a likely reason why Cap Gemini looked favorably upon Hoskyns as an acquisition target.

—Paul Tate

NORSK DATA AS

OLAF HELSETSVEI 5
P.O. BOX 25, BOGERUD 0621
OSLO 6, NORWAY
(47-2)-62-80-00

RANK 20
IS REVENUE $383.5 M

Norsk Data AS is on a downward spiral. In the past two years, the company's losses totaled Kr740 million ($118.2 million). In January of 1991, managing director Erik Engebretsen had to acknowledge that 1990 was another loser. During the second half of the year, business fell faster than expected, and the company wound up with a 1990 loss of Kr129 million ($21 million). If it is any consolation, this is less than a third of the 1989 loss of Kr345 million ($50 million).

Norsk Data needed sales of Kr2.5 billion ($400 million) to break even. But revenues continued their downward slide, falling 4% last year to Kr2.4 billion ($384 million).

Economic slowdowns in two of the company's most important markets, Sweden and the United King-dom, were largely responsible for the slide. Also, profit margins for ND Comtec, a subsidiary specializing in systems for newspapers and the graphics industry, were squeezed, as customers switched from proprietary to standard platforms.

The company did best in Germany and Denmark, where sales of computer-aided design and manufacturing (CAD/CAM) systems grew. But this success could not compensate for the decline in other markets.

In 1990, Dolphin Server Technologies AS, a company partially owned by Norsk Data, introduced the Uniline 88, a network server. Norsk Data also introduced new UNIX-based Wordplex computers, tailored for customers in Britain, and a UNIX-based library system, Bibdia, for the German and Scandinavian markets. Additionally, the company signed agreements to sell Acer Inc.'s personal computers and Data General Corp.'s AViiON workstations.

Norsk Data continued to trim operations in 1990, reducing its work force by 13%, or 400 employees, to 2,600. The company will eliminate another 500 jobs this year, thereby halving the number of employees since the peak in 1987.

In all probability, 1991 will be another tough year for Norsk Data. At the end of 1990, orders on hand totaled Kr190 million ($30.4 million), the smallest backlog since the early 1980s. Furthermore, the company lost a prestigious order for computers from the Norwegian state lottery commission. Until now, the Norwegian government has been one of Norsk Data's most reliable, and lucrative, customers. The loss of the commission's order has caused observers to ask: Why should a customer choose Norsk Data when even the Norwegian government won't?

—Weje Sandén

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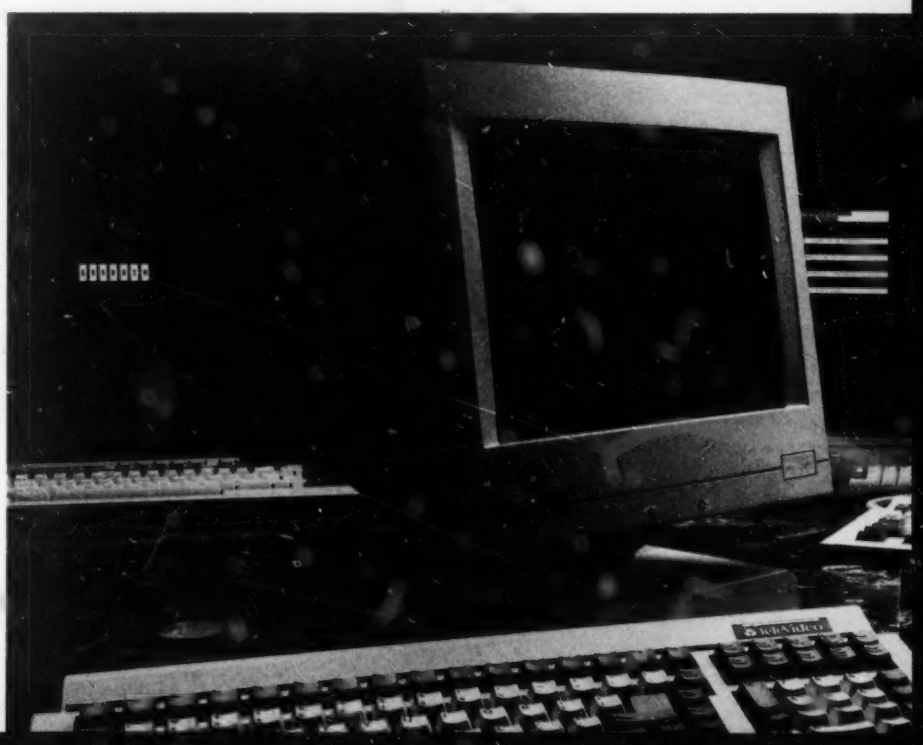

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La Générale De Service Informatique

25 Boulevard de L'Amiral Bruix
Cedex 16
75782 Paris, France
(33)-1-4502-7475

RANK 21
IS REVENUE $375.3 M

Software and services company la Générale de Service Informatique makes its debut in this year's DATAMATION European 25, following a successful 1990. GSI's revenue just cleared the Fr2 billion mark ($375.3 million) last year, up 15.6% from 1989. Net earnings reached Fr92.8 million ($17 million), an increase of 16.7%.

GSI was founded in 1971 as part of Alcatel NV. It separated from the parent firm in 1987, and in 1990 it paid the final installment of the debt contracted to finance the deal.

GSI provides a range of software and services, including network services and facilities management. The company offers industry-specific software and services for the m[illegible] trade, transportation, tourism, banking and finance sectors, as well as cross-industry software, with applications for payroll and personnel management, business management, and marketing and economics. GSI also has an advanced technology group, which focuses on emerging technologies, such as artificial intelligence and natural languages.

Last year, GSI's products in payroll/personnel management and facilities management, experienced the fastest growth, together accounting for 46% of the company's total revenue. The company also bolstered its motor trade division, which accounts for 12% of total revenue, through two acquisitions. It added the Dutch company Ucoms, which specializes in road transportation management software for IBM AS/400 and UNIX systems, and the German firm Weber and Partner, a supp[illegible] of PC software for road cargo management. In all, the number of GSI employees increased by 470 to 3,185.

Two more acquisitions in the payroll and personnel management and motor trade divisions are already lined up for 1991.

—Jean Magari

Dowty Group Plc

Arle Court
Cheltenham, Gloucestershire
GL51 0TP, U.K.
(44-242)-221133

RANK 22
IS REVENUE $349.9 M

Dowty Group PLC's Dowty Information Technology Division embarked on an aggressive course of acquisitions last year in an effort to become a global player in telecommunications. In so doing, it added depth and breadth to its existing lines of power supply, command and control, and data communications products. It also acquired the staff and partners necessary to reach overseas customers.

Despite the ever-deepening British recession, the division did well. Revenue grew a whopping 49% to £197 million ($350 million), primarily through investments in companies like Danish data communicaion manufacturer Dataco A/S. But the group as a whole, which includes aerospace products, military electronic [illegible]stems and polymer engi-

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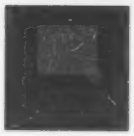
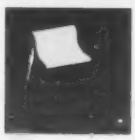



neering businesses, as well as the IT division, grew by only 6.9%, to £731 million ($1.30 billion) in revenue.

Information technology became more important to the Dowty Group in 1990: the IT division contributed 27% of the group's total revenues, up from 19% in 1989.

The acquisition of 60% of Dataco swelled the IT division's ranks from 1,790 at the beginning of 1990 to 2,425 by December. Dowty paid £36 million ($64 million) for the Danish firm, which manufactures local area networks based on the Open System Interconnection protocol. Dataco went on to form an alliance with CASE/Datatel Inc. of Cherry Hill, N.J., another Dowty company, which specializes in multiplexers and X.25 communications equipment. That venture is developing fiber distributed data interface (FDDI) products.

The end of 1990 brought a major organizational shakeup, when CASE/Datatel was renamed Dowty Communications, marking the complete integration of its constituent parts, CASE Communication Inc., Datatel Inc. and Rixon Inc. The newly named company will use its combined strengths in the design and distribution of modems, multiplexers and other data communications products to make an assault on practically the entire communications marketplace in 1991.

The global recession has dampened hopes for the future. This April, the group announced it would reduce its work force by 17% in a cost-cutting measure.—*Glenis Moore*

SAP AG

MAX-PLANCK-STRASSE 8
6909 WALLDORF
GERMANY
(49-6227)-340

RANK **23**
IS REVENUE **$340.0 M**

With the help of several cooperative efforts and acquisitions, SAP AG (Systeme, Anwendungen und Produkte In Datenverbeitunt) was able to meet its goals for 1990 and build up a stronger international presence. Revenues in 1990, which the company reports in dollars, grew 39% to $340 million. Net earnings grew a substantial 20.5% to $54.7 million. Non-German units were strong performers: SAP International accounted for 42% of the company's revenues. Revenue last year for fledgling SAP America rose more than threefold from its 1989 level.

Together with Siemens-Nixdorf Informationssysteme AG and Robotron-Projekt Dresden GmbH, SAP created the software and system house SRS GmbH of Dresden. SAP owns 45% of that company, which services the eastern German market. In addition, SAP agreed in 1990 to cooperate with the Soviet software house ZPS, based in Tvor, U.S.S.R. The goal is to begin development of a Russian version of SAP's R/2 software, the firm's flagship fully integrated business software line.

To better serve its customer base in the West, SAP acquired Steeb and CAS GmbH. As a result, SAP established Steeb-CAS GmbH to concentrate on software for IBM AS/400 minicomputers.

SAP's R&D bill in 1990 accounted for 22% of the company's revenues. The investment, the company says, made three important steps possible. Its ABAP/4, Data Dictionary, Screen Painter and CUA-Painter products became available for R/2 users. The company introduced version 5.0 of R/2 on schedule. And, in the last half of 1991, SAP will unveil the next generation of R/2, dubbed R/3. The new line will extend to more platforms, including UNIX systems and the AS/400. —*Peggy Sulz Trautman*

CGI-INFORMATIQUE

34, RUE DU CHÂTEAU DES RENTIERS
F-75640 PARIS, FRANCE
(33-1)-40-77-20-00

RANK **24**
IS REVENUE **$289.1 M**

CGI-Informatique, which bills itself optimistically as the world's largest computer-aided software engineering company, has been one of the fastest growing IT suppliers in Europe.

Relying on a blend of internal growth and growth by acquisition, CGI's revenues grew a healthy 18.1% in 1990 to Fr1.57 billion ($288.2 million). Net earnings did almost as well, rising 15.4% to Fr143.4 million ($26.3 million). But growth slowed toward the end of the year, a deceleration CGI blames on the Gulf crisis.

CGI predicts it will accrue revenue of $330 million this year and $460 million in 1992. Analysts believe these figures—along with continued high profitability—are eminently reachable given the company's concentration on markets that have good growth potential and the firm's aggressive, cash-backed acquisition campaign.

In April 1990, CGI bought two major PC products, and their attendant personnel, from Transform Logic Corp. of Scottsdale, Ariz. The products are DesignAid II, which automates the front-end planning, analysis and design phase of the application development life cycle, and Source/RE, a reverse-engineering tool that produces structure charts, complexity analysis and both logic- and job-flow diagrams.

In May, U.S. subsidiary CGI Systems Inc. of Pearl River, N.Y., unveiled PACREVERSE, a reverse-engineering product that enables developers to bring COBOL applications into integrated, repository-based CASE environments.—*Sean Kelly*

REUTERS HOLDINGS PLC

85 FLEET STREET
LONDON EC4P 4AJ, U.K.
(44-71)-250-1122

RANK **25**
IS REVENUE **$264.7 M**

Reuters Holdings PLC has flourished over the past decade by providing traders, brokers, analysts and others in the financial community with instantaneous information. But now customers want to be able to display that information graphically, analyze it and combine it with their own data. "We need to continue to add value to the data we provide," says David Ure, Reuters's managing director for Europe.

Toward that end, Reuters has been developing platforms for future software-intensive products. The Money 2000 service introduced last year delivers information on foreign currency and money markets in a form that can be more easily manipulated on a workstation. Phase one of Dealing 2000, a trading system unveiled in 1989, works with PC software to let traders simultaneously juggle several deals.

But it's still too early to judge the success of these products. Although sales of Dealing 2000 have exceeded analysts' expectations, the second phase, designed to automate transactions more fully, was delayed because of technical modifications. That setback sent the company's stock plummeting last summer. Doubts were intensified by long negotiations concerning the development of Globex, the off-hours trading system that Reuters is working on with the Chicago Mercantile Exchange and other organizations.

Nevertheless, Reuters's lead position in the industry seems unassailable. Peter Job, who took over as chief executive officer in March of 1991 from Glen Renfrew, points out that incremental improvements on the company's mainline products are more important than fancy new projects.

Financially, last year was a hit: pretax profits rose 13.1% on revenues of £1.37 billion ($2.43 billion), up 15.3% from £1.187 billion ($1.94 billion) the year before. With a horde of cash, the company is braced for a long downturn. —*Fred Guter*

NEW PRODUCTS

A SELECTION OF RECENT INTRODUCTIONS

DATAMATION'S PRODUCT REVIEW

PCs & WORKSTATIONS

IBM Goes Hollywood

Hollywood is IBM's contribution to the Windows-based presentation graphics market.

The software comes with an integrated outliner that organizes a presentation, checks spelling and creates bulleted lists or organizational charts. A data manager function allows users to import data from spreadsheets and establish links; charts are automatically updated when the source data changes. Hollywood also provides predesigned templates and color schemes for presentation slides, paint and draw tools, and a communications program for producing.

Hollywood requires at least a 286-based machine with 1.6 megabytes of random access memory (RAM) and a hard disk (IBM recommends a 386 with 2MB RAM), DOS version 3.3 or later, and Microsoft Windows 3.0. Hollywood is priced at $495. IBM, White Plains, N.Y.

Circle 520

Color On The Go

The T3200SXC, Toshiba America Information Systems Inc.'s first color portable PC, is designed for people who need color on the road. The machine is designed for slide shows, animated graphics or full-motion video.

The VGA-compatible, liquid-crystal display can present 256 colors simultaneously from a palette of more than 185,000. The display uses thin-film transistor, liquid-crystal display (TFT-LCD) technology.

Weighing in at 17 pounds, the T3200SXC features a 20-megahertz 80386SX processor. The $8,999 portable comes with 1 megabyte of memory, expandable to 13MB; one full-size and one half-size expansion slot; a dedicated slot for a Toshiba modem; a 120MB hard disk; and a 1.44MB, 3.5-inch floppy drive. TOSHIBA AMERICA INFORMATION SYSTEMS INC., Irvine, Calif.

Circle 521

Take A RISC On X Terminals

Hewlett-Packard Co. recently rolled out a four-member family of reduced instruction set computing (RISC)-based X terminals. HP says the machines deliver two to four times the performance of competitive X terminals, a claim based on the Xstone and x11perf public domain benchmarks for measuring X Window System server products.

HEWLETT-PACKARD'S 700/RX FAMILY
of X terminals are based on RISC processors

Based on Intel's i960 superscalar microprocessor, the HP 700/RX family is designed for geographic information systems, mechanical computer-aided design (MCAD), desktop publishing, business graphics, and office and manufacturing automation.

The 22.7-megahertz models, 19Ca and 16Ca, feature eight-plane color graphics and have 4 megabytes of memory. They boast 75,000 Xstones of performance and have an overall x11perf rating of 0.85. The 20MHz models, 19Mi and 16Gi, offer 2MB and 4MB of memory, respectively. Each machine's memory can be expanded to 18MB. The 19Mi has a monochrome display; the other three are color models that can display 256 colors from a total palette of 16.7 million. Prices range from $2,995 to $5,995. HEWLETT-PACKARD CO., Palo Alto.

Circle 522

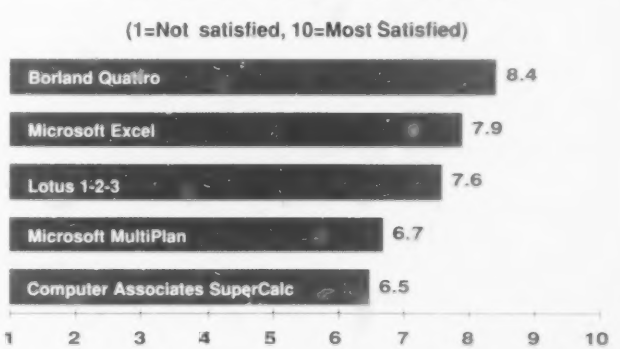
SOFTWARE

Ingres For A/UX Macs

Ingres now runs on yet another platform—Macintoshes running the A/UX operating system. Ingres For A/UX 2.0 includes the Ingres relational database management system (RDBMS), fourth-generation language (4GL) application

IS Satisfaction Scorecard: Spreadsheets

Are IS managers satisfied with their spreadsheets? DATAMATION surveyed IS managers who have purchased microcomputer spreadsheets to determine their level of satisfaction. Their responses indicate that Excel and Quattro owners are more satisfied with their choice than 1-2-3 owners.



Source: DATAMATION Brand Preference Study

MARKET INSIGHTS

AN ANALYSIS OF ECONOMIC TRENDS

Bye-Bye Recession, Recession Bye-Bye

BY MADELINE FRANCHI
Cahners Economics

Dare we say it? We do! The recession for the IS industry is on its way out, and a mild recovery is on its way in. How do we know? The DATAMATION Information Systems Performance Indicator (ISPI), our exclusive gauge that tracks changes in the health of the IS industry, turned the corner in February. It rose for the first time in nearly a year, to 95.94 after a low of 94.89 in January. And looking at March data—with an advance reading of 96.47—plus some early readings for April, we can say with reasonable confidence that this upswing has legs.

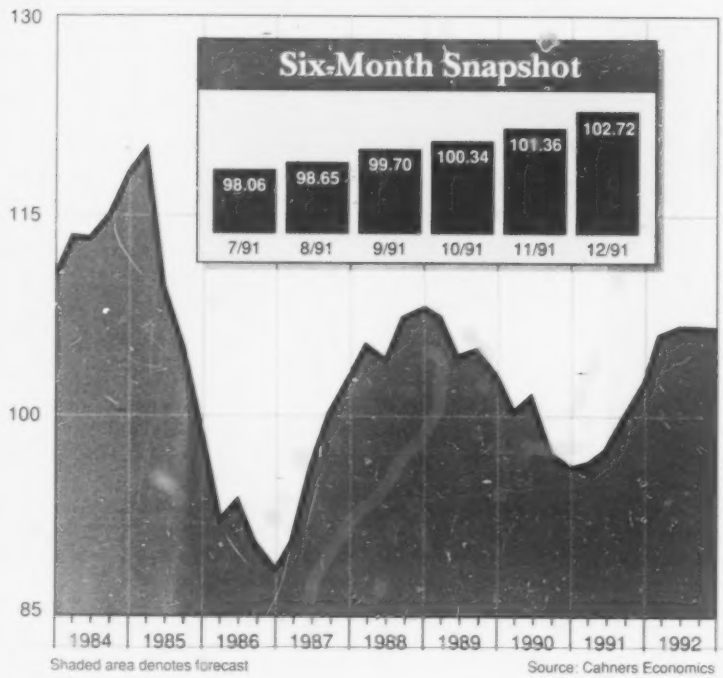
But when will those legs get moving at full tilt? Not soon. The industry won't really get back up to speed until October or November, which is when we expect the indicator to finally rise above the 100 mark. A value above 100 means the industry's performance in the three preceding months exceeded its performance in the same three-month period of the previous year. (So, if the mark rises above 100 in October, it will mean that the industry performed better in August, September and October 1991 than it did in the August-through-October period of 1990). After it breaks the 100 mark, we are forecasting that it will continue to rise, but nowhere near the rate at which it did in the double-digit 1980s.

Overall, we expect this recovery to be mild for the IS industry; the ISPI will most likely stay below the 110 mark despite the coming turnaround. Some industry-specific statistics on the IS industry continued to fall in March. But the rate of decline for these sectors has slowed significantly in recent months. At any rate, if you're looking for a model of this year's turnaround, you'd be well served to look back to 1988—one of the slowest and briefest turnarounds on record. ▭

For more information on Cahners Economics's forecasting services, including seminars, newsletters and database diskettes, call Dan Buchan at (617)-630-2105, fax him at (617)-630-2100 or write to him at Cahners Economics, 275 Washington St., Newton, MA 02158.

The IS Performance Indicator

Our forecast of improvement is fast proving true.



Shaded area denotes forecast

Source: Cahners Economics

	March 1990	Feb. 1990	% Change 2/90-3/90	March 1989	% Change 1989/1990
■ Information-Processing Equipment					
Shipments (SA, $ billions)	9.28	9.36	-0.9	9.35	-0.8
New Orders (SA, $ billions)	8.93	9.79	-8.8	9.45	-5.4
Unfilled Orders (SA, $ billions)	28.60	28.95	-1.2	27.16	5.3
Inventory (SA, $ billions)	16.03	16.11	-0.5	17.22	-6.9
■ Computer Production Workers					
Employment (NSA, thousands)	265.3	265.2	0.0	280.6	-5.5
Average Weekly Hours (monthly avg.)	40.0	41.1	-2.7	41.6	-3.8
■ Stock Index					
S&P's Computer Systems Stock Price Index	187.9	201.8	-6.9	181.6	3.5
■ Contracts & Orders					
New Plant & Equipment (SA, $ billions)	41.0	41.9	-2.1	41.1	-0.3

SA = seasonally adjusted
NSA = not seasonally adjusted

Source: U.S. Commerce Dept., Standard & Poor's forecasts, Cahners Economics

NOTE: The U.S. Commerce Department revised all historical data on shipments, orders, inventory and unfilled orders. Therefore, you will notice revisions in the IS PI compared with previous issues of this magazine.

MARKET INSIGHTS

A SURVEY OF TECHNOLOGY TRENDS

It's A WANderful Life

BY WARREN CHILDS
Business Research Group

In the latest survey of the DATAMATION Technology Panel, some 51% of the sites surveyed said they use wide area networks to link personal computer-based local area networks. Such LAN-to-LAN communication currently represents only a fraction of the total data and voice communications traffic on public networks. But transmission carriers are making major investments to improve WAN technology, believing that WANs will become the standard method of networking in the future. Most have been busy developing and deploying a number of new services to meet the demands of this fast-growing market.

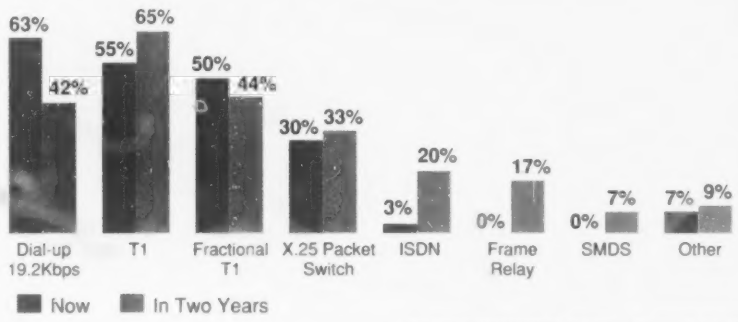
Survey respondents are also moving toward use of faster transmission speeds. True, many are still using dial-up modems at speeds of 19.2 kilobits per second or lower for WAN links, but not for long. Panel members say that within the next two years they will more often be using full T1 and fractional 64Kbps T1 links for their LAN-to-LAN communications.

Panel members also say they are moving toward several other emerging technologies for their WAN service needs. A solid 33% of respondents expect to use fast-packet switching in the future, up slightly from 30% now. And members expect dramatic growth in the deployment of other new technologies: 20% expect to use Integrated Services Digital Networks (ISDN) in the future, whereas only 3% use them now. And although none use them now, 17% expect to implement frame relay technology and 7% to employ switched multimegabit data services (SMDSs) in two years. □

For more information, call Nancy Finn at (617)-964-6204, fax her at (617)-558-4402 or write to her at the Business Research Group, 275 Washington Street, Newton, MA 02158.

Who Wants Which WANs?

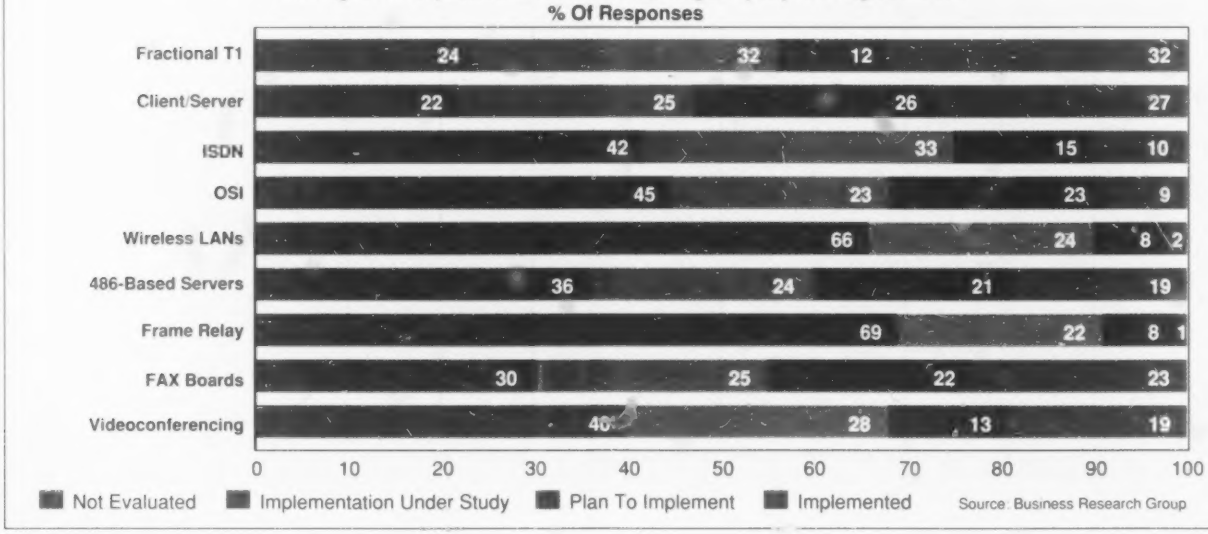
Types of WAN connections panel members are using or plan to use to connect their PC-based LANs.



Source: DATAMATION, Business Research Group

DATAMATION's Technology Implementation Index: Networks/Communications

DATAMATION each month surveys a select group of its readers--the DATAMATION Technology Panel--to investigate the implementation of new technologies by key user organizations.


% Of Responses
Fractional T1 24 32 12 32
Client/Server 22 25 26 27
ISDN 42 33 15 10
OSI 45 23 23 9
Wireless LANs 66 24 8 2
486-Based Servers 36 24 21 19
Frame Relay 69 22 8 1
FAX Boards 30 25 22 23
Videoconferencing 40 28 13 19
0 10 20 30 40 50 60 70 80 90 100
Not Evaluated
Implementation Under Study
Plan To Implement
Implemented

Source: Business Research Group

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